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STATE OF NEW YORK  
OFFICE OF THE STATE COMPTROLLER

October 6, 2017

Mr. Joseph J. Lhota  
Chairman  
Metropolitan Transportation Authority  
2 Broadway  
New York, NY 10004

Re: Subway Wait Assessment  
Report 2017-F-7

Dear Mr. Lhota:

Pursuant to the State Comptroller's authority as set forth in Article X, Section 5 of the State Constitution and Section 2803 of the Public Authorities Law, we have followed up on the actions taken by officials of the Metropolitan Transportation Authority to implement the recommendations contained in our prior audit report, *Subway Wait Assessment* (Report 2014-S-23).

**Background, Scope, and Objective**

New York City Transit (Transit) is a constituent agency of the Metropolitan Transportation Authority (MTA). Transit serves an average 5.6 million weekday passengers on its 24 subway lines (including three shuttle lines).

Wait assessment measures the ability of Transit to provide evenly spaced subway service in conformance with the headways (time between trains) in the official schedule. The assessment reflects the number of intervals between trains that meet the standard (headway plus 25 percent) and those that do not. The Rail Control Center (RCC) of the Department of Subways (Subways) maintains the evenness of service and compliance with the schedule. Of the three components that make up the Service-Key Performance Indicator, Transit has given wait assessment a 60 percent weighting. Transit's System Data & Research Division (Division) of Operations Planning calculates the wait assessment statistic based on computerized train tracking information for the numbered subway lines (except the No. 7 line) and from a variety of data collected for the remaining lines. The Division generates reports that are distributed to Transit's senior management. The wait assessment is part of the monthly Transit & Bus Committee Meeting report.

Our prior audit determined that wait assessment performance did not improve during the audit period and that Transit had not developed a full and comprehensive plan to deal with

the long-term causes of service disruptions, including matters related to major structural and technology improvements. The goal for meeting the weekday wait assessment standard was 79.4 percent for 2013 and 80.7 percent for 2014. The actual results were 80.3 percent for 2013 and 78.8 percent for 2014.

The goal for meeting the weekday wait assessment standard remained at 80.7 percent for 2015 and 2016. However, the actual results were 77.4 percent for 2015 and 78 percent for 2016. As of February 2017, the year-to-date wait assessment performance was 75.5 percent.

We issued our initial audit report on April 6, 2016. The objective of our follow-up review was to assess the extent of implementation, as of August 10, 2017, of the five recommendations included in the initial report.

### **Summary Conclusions and Status of Audit Recommendations**

We found that Transit made some progress in addressing the problems identified in our prior report. However, additional actions are warranted. Of the five prior audit recommendations, three were partially implemented, one was not implemented, and one was no longer applicable.

### **Follow-Up Observations**

#### **Recommendation 1**

*Disclose pertinent details of statistical projection methodologies, including the confidence and error precision levels, when publishing wait time performance data.*

Status - No Longer Applicable

Agency Action - This recommendation only applied to the B Division and the No. 7 because, at the time of the prior audit, the A Division (or numbered lines except No. 7) and the L train wait time calculations relied on electronic data collection and not on statistical projection.

Starting January 2017, Transit transitioned to electronic data collection for the B Division (lettered lines) and the No. 7. With the I-TRAC system, the subway dispatchers enter train arrival and departure times at selected stations. The train is tracked by I-TRAC at terminals and at points along the trip. On some lines, Programmable Logic Controllers (PLCs) are connected to the track circuits that make up the signal system. PLCs record the train's departure when the first car of the train passes the signal as it departs the station. Also, as the new countdown clocks are installed on the B Division, transponders on trains are read by receivers along the track, and this system (called the Beacon System) records the time and car numbers. The information from the PLCs and the Beacon System is sent back to a central location and is accessed by Transit officials, who use it to prepare and publish wait time performance data. The data is analyzed by Transit officials, who look for anomalies/ conflicts in the data and discard them prior to making the wait assessment calculation using the remaining "valid" data.

To confirm how data for the B Division (lettered lines) and No. 7 train were collected, on June 9, 2017, we observed the recording of train information at the RCC. In addition, on May 24, May 26, and July 12, we observed trains at various PLCs (timing points) on the E, F, R, J/Z, and No. 7 lines (West 4th Street, Roosevelt, Queensboro Plaza, Jamaica Center, Broad Street, and Myrtle Avenue). We compared the times we recorded to the PLCs/I-TRAC/Beacon System data. Of the 93 PLC observations, there was a variance of one minute for 26 observations and two minutes for one observation. Of the 94 I-TRAC/Beacon System observations, there was a variance of one minute for 25 observations, two minutes for four observations, eight minutes for one observation, and nine minutes for two observations. Transit officials advised that the data for the eight- and nine-minute variances came from the Beacon System, which was in test mode at the time, and these trips were discarded and not included in the actual wait assessment calculation due to the variances.

We question the use of data from the new Beacon System while it is in test mode. Moreover, when such anomalies exist, Transit officials should determine the cause of the variances.

### **Recommendation 2**

*Formally assess and revise as necessary the methodologies used to calculate and report wait time performance data. Appropriately weight the performance statistics of the various lines and shuttles and promote full and transparent disclosure of such data.*

Status - Partially Implemented

Agency Action - Since January 2017, Transit moved to an electronic data collection system for the lettered lines and the No. 7. The wait assessment for each line is measured separately and reported on the MTA website, together with the wait assessment for all other lines in the subway system. However, all lines, including shuttles, are still given equal weight and counted in the overall averages.

### **Recommendation 3**

*Develop a comprehensive and detailed long-term plan to address the reasons wait assessment performance has decreased. Such a plan should include the structural and information technology improvements that are needed, as well as timeframes and cost estimates to make the required improvements.*

Status - Not Implemented

Agency Action - In response to our initial report, Subways officials stated they did not agree with our recommendation. Consequently, they did not implement it. Instead, Subways officials provided a Corrective Action Plan showing the updated status of the initiatives launched on three targeted lines (No. 6, No. 7, and F), and stated that they made information

technology improvements to monitor if the trains are spaced evenly.

Transit officials stated that long-term plans include use of Integrated Service Information & Management for the B Division to provide consistent and timely information to customers and staff. However, they did not provide a written plan. Officials stated that wait assessment performance has decreased mainly due to overcrowding, which is an ongoing issue, and would require additional subway lines and additional trains that can be run using a Communications-Based Train Control system.

#### **Recommendation 4**

*Formally assess and revise as necessary the minimum frequency guidelines to address days (particularly the weekends) and hours not covered by specific standards.*

Status - Partially Implemented

Agency Action - On March 31, 2017, Transit issued a new Policy/Instruction to provide guidance for the interpretation of the “NYCT Rapid Transit Loading Guidelines.” The revised Policy/Instruction includes the Maximum Headway Guidelines for weekends from 8 a.m. to 10 p.m.

#### **Recommendation 5**

*Develop and implement a process whereby real-time data obtained by traffic checkers is used to advise patrons of delays and potential alternative lines to help alleviate congestion.*

Status – Partially Implemented

Agency Action - Transit no longer uses the traffic checkers to obtain data for wait assessment. As of January 2017, data for the lettered lines and the No. 7 are collected electronically.

The new Countdown Clocks being installed on the B Division have a crawler at the bottom of the screen which can provide information regarding delays and other issues throughout the transit system. The Countdown Clocks went into service on the C line in July 2017, and will continue to be rolled out into 2018. Older Countdown Clocks on the A Division can also be used to announce delays.

Contributors to this report were Robert C. Mehrhoff, Daniel Raczynski, Lillian Fernandes, and Teeran Mahtoo-Dhanraj.

We would appreciate your response to this report within 30 days, indicating any actions planned to address the unresolved issues discussed in this report. We also thank MTA management and staff for the courtesies and cooperation extended to our auditors during this process.

Very truly yours,

Carmen Maldonado  
Audit Director

cc: M. Fucilli, MTA  
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Division of the Budget